

# MULTIRATE FILTERING: THEORY EXERCISE ( - JAPANESE)<sup>\*</sup>

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Based on *Multirate Filtering: Theory Exercise*<sup>†</sup> by

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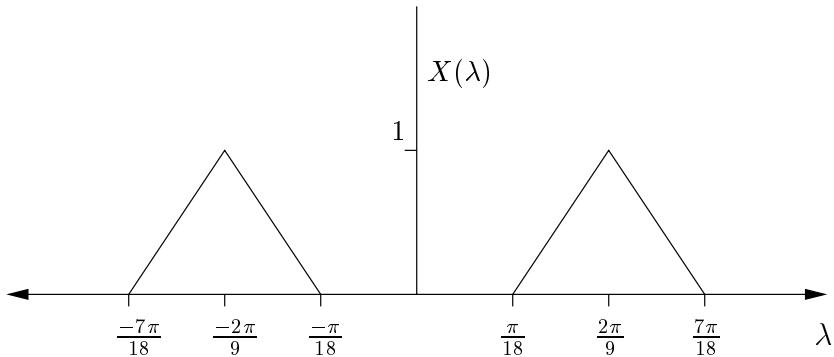
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Creative Commons Attribution License 1.0<sup>‡</sup>**Abstract**

,G(SzgkΠ1?Δ”#aLyAÆØ-%j~GDBGaØCΠkF!d\$kGΠ2d,A%@&amp;W2Ø

**1** œΛG(SzgΓj~A0?ΔFigure 1D2  $X(\omega)$  k42dj~k!aØΘ890Δ  $X(\omega)$  HΔj~GDTFT(discrete time Fourier transform)@œdA0W2Ø**Figure 1:** ,Gzg@[#2dJ~G

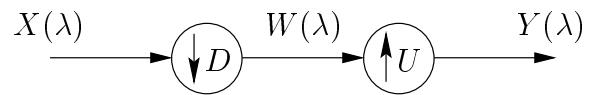
$\Gamma U = D = 3A[\#0\Delta\text{Figure 2 (PjXz0)GoekΠ~08ΛGj~GDTFT}^i W(\omega) \#aL Y(\omega)k0?Y.ÆΘ ,GA&Δ”#aLyGj~GG1+((1)\#a$   
 $\omega kyGoeWD;`2d^-Δj~Gœ%CdAvcZ2djDXÆdGoeW%Cd,AD2d^%œcW2Θ08%j?Δ\text{Figure 1D}\#^*d X(\omega) G \omega$   
 $AYGD\#^*d W(\omega)G \omega @HΔ1d~kXÆ?ÆdD[\$hb3ΔvcZGjD[\#0?ÆdGoeW%Cj?#cΔÆGGoeWHÆG \frac{1}{D}/@2Θ$

$$W(\omega) = \frac{1}{D} \sum_{k=0}^{D-1} X\left(\frac{\omega - 2\pi k}{D}\right) \quad (1)$$

$$Y(\omega) = W(U\omega) \quad (2)$$

\*Version 1.6: Jun 3, 2009 3:43 pm -0500

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**Figure 2:**  $\infty$

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